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LECTURE TO SANITARY OFFICERS.

OBJECTS AND METHODS OF INSPECTION.

BY

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THE SANITARY INSTITUTE.

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OBJECTS AND METHODS OF INSPECTION. X

By JOHN F. J. SYKES, D.Sc., M.D., M.O.H. St. Pancras.

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In the General Order of the Local Government Board, dated March, 1891, set out in detail and included in the Syllabus of Examination of The Sanitary Institute, will be found enumerated the duties of Inspectors of Nuisances, and the subjects to which they relate. It will not be necessary, therefore, to occupy your time by reciting a long list of subjects for inspection, the principal objects of which are :—

1. The discovery and abatement of nuisances or sanitary defects for the protection of health.
2. The prevention of the spread of infectious diseases.
3. The supervision of the quality and wholesomeness of foods.

The Inspector is set in motion by—(1) Complaints received; (2) Infectious diseases notified; (3) Instructions to inspect specified streets, &c., from house to house, and (4) Instructions to periodically inspect specified premises.

Method in inspection is important. Always take notes in writing, and record exactly what you find. Avoid all prejudice and the personal equation as much as possible. Distinguish what you find from what is told you, and note by whom you are told. Be exact as to names, places, hours, and dates, and details generally. Cultivate the art of observation and enquiry. Know your subject that you may know what to observe and what to enquire into. I will endeavour to illustrate my meaning by instances of observation and enquiry generally, and then describe more especially the inspection of dwelling places and other premises.

Overcrowding.—This is a constantly recurring nuisance, and in inspecting it is necessary always to ascertain the number of occupants of every room in every sub-let house. It is not always possible to get a correct statement from the occupant of any particular room, but enquiry of another occupier in the same house will frequently elicit not only the number living in a particular dwelling, but the number in the whole house.

X. The lecture was illustrated with numerous diagrams, plans, sections, etc.

Corroboration is valuable in securing accuracy. The number and size of the beds are strong evidence. The size of a room need not always be exactly measured, with a little experience it may be mentally calculated with sufficient approximation for practical purposes. With this object in view the method of calculating area and capacity must be practised. It is well always to notice the number of air inlets and outlets in a room, and the situation and use of the door, window, and fireplace. The open space about the house itself should also be noted.

Smoke also requires special care in observation. For this purpose a diagram of smoke shades is useful so that an idea of the density of the smoke may be conveyed to others in giving evidence and as a permanent record. In making observations of smoke the following points must be noted. The date and time of day. The description of the premises upon which the chimney is situated, and the use to which the furnace or fireplace is put. The kind of sky or background against which the smoke is seen issuing. The density and variations in the density of the smoke according to numbers on the diagram. The duration in minutes of the prevalence of each particular shade of density. Furthermore, you must distinguish smoke from steam or steam and smoke mixed. If the density and duration of the smoke be sufficient to constitute a marked nuisance do not fail to enquire who has charge of the furnace at the time. The construction of the furnace and the quality of the fuel used are questions rather for an engineer.

Dangerous Infectious Disease.—In making an enquiry of this kind, in addition to the information contained in the Notification Certificate, the following facts should also be ascertained. Where the clothes are washed; whence the milk supply is obtained; the occupation of the patient; the school, workplace, or office attended, and date of last attendance; the date of the beginning of illness and the appearance of rash (if any); the probable source of infection. (For this purpose you should carry a table of the maximum, minimum, and mean incubation periods of the various diseases.) The room occupied by the patient, whether it is a bed-room or a living-room; other occupants of the room, and the name and address of the nurse or attendant and other duties of the attendant. Precautions taken to isolate the room and the patient, and if improperly isolated whether the medical attendant considers removal to hospital inadvisable, and if so, why? if removed, to what hospital and on what date; if not removed the probable date when disinfection will be required. (A table of the average duration of infection in the various diseases is useful for this purpose. If intimation can be obtained from the medical attendant directly,

or indirectly through the person in charge, this is still more useful.) A record of the sanitary condition of the premises must be made and the house inspected in detail as to the number of persons occupying each portion of it, their occupation, and the work-place, or school attended. In the case of Small Pox the Vaccination Officer must be notified. If the infectious sufferer be a child notification should be sent to the teacher of the school attended by the patient. The principal points of these details, in addition to the particulars on the Notification Certificate, should be kept consecutively in an Infectious Disease Register so that all essential references to any particular case may be seen at a glance.

Sampling Water.—As another illustration it is frequently necessary in rural districts to ascertain the quality of the well water. For this purpose a sample of the water must be taken. The best method is to use a Winchester quart bottle, equal to a half gallon, with a ground glass stopper. The bottle should be well cleansed and prepared by being rinsed with hydrochloric or other acid, and then be rinsed several times with water until the drippings are no longer acid to the tongue and taste, and at the time of use, rinsed with the water to be sampled. The bottle should then be filled with the water within an inch or so of the neck, the stopper inserted and tied down securely. Sometimes a luting of linseed meal or clean clay is laid round the stopper; but an india-rubber cap over all is the best. It should then be securely packed in straw or hay in a wicker basket for transport.

Sampling Food.—Another instance, under the Sale of Food and Drugs Adulteration Act you must be familiar with the usual procedure. A sample is purchased in the ordinary way by yourself or by an agent. After paying for it, the vendor is informed for what object it has been purchased. Divide the sample into three parts; securely fasten and seal each part and number and letter them, taking note of the number and letter and of the name and address of the vendor. Offer one of the parts to the vendor, take the other two parts away, sending one to the analyst and retaining the other to be produced in court if a prosecution be necessary. For the purpose of sampling, proper bottles and tins with labels attached must be carried in a bag, which should also contain a special notebook. The quantities necessary to be purchased are about a pint of milk, or a pound of butter, and other substances in proportion, but an ounce or two of condiment is sufficient. In sampling milk or other food in transit it is necessary only to take the sample without dividing it: but, in case of prosecution it is necessary for the consignee to give evidence as to what he had contracted

to buy. Possibly the contract may have been for skim milk, for instance.

Unsound Food.—The method of procedure in the case of unsound food must not be confused with that of adulterated food. The unsound food may be an animal intended to be prepared for food, or any article, solid or liquid, intended for the food of man. Be quite satisfied in the first place that it is intended for food, and in the second that the food is unsound, and then seize it at once. After seizing it, if still in doubt the opinion of a colleague at hand may be asked or the Medical Officer of Health be consulted. The food or a sample of it, if bulky, is then taken to a Justice who will condemn it, order its destruction, and issue a summons when necessary. It should be prevented from being used as food by saturating it with common carbolic acid or creosote, and then be buried or burned.

House Inspection generally.—In considering the inspection of premises it may be well to first give a general idea of the inspection of an ordinary house. First observe, externally, the access of light and air, the open space around, whether it is properly levelled and drained, and the guttering and roofing. Note any animals kept and their condition, any offensive accumulation, ditches or stagnant water, and whether any offensive trade is carried on or any effluvia is produced. Within the house, note any dampness, especially in garret or basement, the absence of any dry area or damp course, whether the basement is impervious and if there is any ventilation below the floor, and any underground sleeping room. In staircases, passages, and rooms, observe the soundness and cleanliness of the surfaces generally. In the last, the structural and decorative condition of the surfaces, the cubic capacity, and the number and age of the occupants, and the purposes for which occupied. The points of lighting and ventilation must also be attended to. In reference to water closets their number, situation, ventilation and cleanliness should be noted, the efficiency of the apparatus and the mode of water supply. The soundness, disconnection and ventilation of the house drain, the disconnection of waste pipes, overflow pipes, rainwater pipes, and the situation of gullies, the absence of receivers and cesspools. The wash-house floor should be smooth, sloped and drained, and the waste cut off. It should be ascertained whether the water supply is constant or intermittent, and whether from a main or from some other source, and the capacity, situation and cleanliness of the cisterns must be noted, and the course of the overflow and supply pipes therefrom. The ash receptacles will require attention, and, where dry systems of excreta-removal prevail, also the ash or dry closet.

Before speaking of premises in detail it will be well to give a few approximate definitions, the legal definitions are generally lengthy and complicated, but the following are useful to the practical understanding of certain points. Places of human habitation not only include places used for dwelling purposes, but also those used for other purposes of habitation. A dwelling is generally held to be so constituted by the act of sleeping or passing the night with intent to sleep. A building is a structure partly or wholly enclosing cubic space and more or less permanently attached to the soil. A house not only includes a dwelling house, but also any building capable of being used for habitation. The curtilages and appurtenances attached to a house wholly or partly used as a dwelling are generally held to form part of the house.

Dwellings.—In classifying dwellings they may be regarded as movable or fixed. Movable dwellings include canal boats on water; tents, vans, and sheds on land. Fixed dwellings include hop and fruit pickers' dwellings, cottages and huts, and larger houses.

Canal Boats.—In inspecting a Canal Boat-dwelling the points to be noted are:—Is it a Canal Boat? With the exception of ships registered under the Merchant Shipping Act any vessel, however propelled, for the conveyance of goods along any inland water way within the body of a country is a Canal Boat. It must be ascertained whether it is used as a dwelling, and, if so used, if it is registered. If registered, the word "registered," the name and place of registration, the registered number and the name of the boat should be found conspicuously painted on both sides of the cabin on the stern, so as to be plainly seen from both sides of the canal. If properly lettered and marked the master's certificate should tally, and state the maximum number of persons allowed in the dwelling. It should be ascertained that the dwelling is properly used. A cabin is not allowed to be occupied as a sleeping place at any time by a male over 14 and a female above 12 years, unless husband and wife. A cabin occupied as a sleeping place by husband and wife is not allowed to be occupied as a sleeping place by a male above 14 and a female above 12. There must be 40 cubic feet of free air space for each person under 12, and 60 cubic feet above 12. In a "fly" boat (worked by shifts) 180 cubic feet is required for two persons occupying a cabin at the same time as a sleeping place. These conditions are modified slightly for boats built before 1878. In inspecting a Canal Boat *for registration* the following conditions must be looked for:—That there is at least one dry clean weather-proof cabin in good repair. That the capacity of the after-cabin be 180 cubic feet

and the fore-cabin 80 if intended to be used as a dwelling. That sufficient means are provided for ventilation in addition to the door. That adequate and convenient sleeping accommodation is fitted or constructed. That one cabin is fitted with a suitable stove and chimney. That a suitable tank for storing at least three gallons of water is provided. And, that if used for offensive cargo, a cabin used as a dwelling is separated by two bulk-heads, four inches apart, of which that next the cabin is water-tight, and the space between, open to the air and supplied with a pump. There are one or two other less important requisitions as to narrow and wide boats. A "narrow" boat is less, and a "wide" boat more than 7 feet 6 inches across. Any structural alteration voids the certificate. For the purpose of inspection the hours are from 6 a.m. to 9 p.m.

Movable Dwellings.—In reference to tents, vans, sheds, and similar structures it must be noted that they are kept in a cleanly and habitable condition. That no nuisances arise in connection with them, and that no infectious disease is nursed therein. Under the Housing of the Working Classes Act, 1885, section 9 (2), the sanitary authorities may make bye-laws for this class of dwelling, and then it is generally provided that they shall not be erected within 100 yards of a street or dwelling-house.

Hop Pickers' Lodgings.—The points for inspection and observation here are:—That the habitation is clean, dry, and weather proof, and is ventilated and lighted. That a floor space of 15 square feet is allowed each occupant, children under 12 being allowed one-half. That clean straw or other suitable material is supplied for bedding, and renewed when required. That the beds are screened off where occupied by adults of different sexes. That there is a sufficient supply of good water. That there is a separate cooking place for every 15 persons. That there is adequate privy accommodation for each sex. That immediately before occupation the premises and accessories have been thoroughly cleansed, and during occupation are kept cleansed.

Vegetable and Fruit Pickers' Lodgings require similar regulations and supervision.

Cottage Dwellings.—These are mainly to be found in rural districts but exist also in towns. Dampness, pollution of surface and subsoil and of water are the great troubles here, and may be briefly considered under the heads of construction, refuse removal, and water supply. In addition to the general state of repair they must be kept wind and water tight. In a water-logged soil subsoil drainage may be necessary. A ventilated

space between the floor and the earth, or a basement layer of concrete, are things not generally found. There should be an absence of earth or refuse matters against the outer walls, and a dry space or area 3 feet wide from 6 inches below the level of the floor upwards may be required. If then the walls require support this should be filled in with rubble, or the area may be arched over in places. Of course in new cottages a proper damp course would be inserted above ground level. In some cases it is desirable also to pave the surface outside for a distance of a few feet from the walls. Proper guttering and piping to carry off the rainwater must be provided. The windows should be made to open properly, and the place where the food is kept should ventilate into the open air. The slop water should be cast into a proper sink, with the waste cut off and delivering into a culvert or drain which should deliver upon the land at a distance. There should be no sunken pit for excreta or refuse, but a proper ash or earth closet above ground, and the receptacle should preferably be movable rather than fixed, but in any case it should be impervious. Cesspools should on no account be permitted near a cottage. The object of cesspools is to intercept and retain solid excreta, but solid excreta should not be permitted to enter drains unless there is a proper sewerage system, and then cesspools are not necessary. In a rural district with available land, cows, pigs, and other animals should be kept at some distance. The manure should be heaped, away from the vicinity of the dwelling and of the well, and the surface of byres should be properly drained on to land, not into a stream or pond. The water used in cottages may be either rain water, surface water, well water, or high pressure water from the main. The surface from which the rain water is collected and the receptacle in which it is kept should be observed to be cleanly and constructed of proper material. Surface water unless it comes from good grass land, moor land, or high uncultivated land is objectionable. Well water, if derived from a shallow well is open to suspicion, and its pollution is one of the commonest troubles of cottage dwellings. The only remedy then is to sink a properly steyned deep well, or to lay on a high pressure water supply from the main.

Larger Dwelling Houses.—Turning now to the larger type of dwelling houses, it is not necessary to take into consideration the duration of tenancy, whether nightly, weekly, monthly, or quarterly, but the external relative position and the internal relative occupation are most important points.

The External Relative Position of Dwelling Houses influences the number of fronts, whether they be 1, 2, 3, or 4. Taking the ordinary dwelling house to be constructed in rectangular form, houses are generally described as detached, semi-detached,

or terrace houses. These have respectively four, three, and two fronts, the two fronts of the last being on opposite sides. If these houses back immediately upon one another they form respectively semi-detached, four-group, and back-to-back houses, possessing three, two, and one front respectively. In a four-group house the two fronts, unlike those of the terrace house, are on contiguous sides, just as in corner houses formed at the return angles of a block of terrace houses. In the house with one front there can be no perflation of air, and in a house with two fronts on contiguous sides only a partial and diagonal perflation. This applies to four-group houses and corner terrace houses. The construction of back-to-back houses of more storeys than one intensifies their objectionableness, as the room below ventilates into the room above by means of the open staircase and this is not even overcome by the enclosure of the staircase, and the insertion of windows if the house be occupied by several families acting independently. But a still greater drawback to this class of house is the absence of proper curtilage or open space for deposit of refuse receptacles and for domestic purposes.

The Internal Relative Occupation of Dwelling Houses is dependent upon whether they are constructed for one or many tenants, and they may be classified somewhat in this manner:—

1. The house constructed as one dwelling, that is a self-contained house, which is made down into a house let in separate lodgings (in which class of house the underground lodging or dwelling is generally found), or into the common lodging house.

2. The house constructed in separate dwellings, known as the common-stair house or model dwelling house, and which is large or small according to whether it is constructed as a common-stair block or a cottage block.

3. The house constructed as a common dwelling for many occupants, examples of which are the model common lodging house and the shelter or refuge.

4. A special kind of dwelling house constructed to harbour animals and lodge human beings, namely the stable dwelling.

Houses Let in Separate Lodgings, Tenements, or Dwellings require continuous supervision by the sanitary authority. To facilitate this they are in many cases registered under bye-laws. The special point to be noted is that under these bye-laws the landlord is made liable for structural repairs, the maintenance of the drainage and means of ventilation, and the cleansing of all parts of the premises used by two or more tenants, whilst the tenant is held responsible for the

management and cleansing of his own rooms, and the parts of the premises used solely by him. In addition to the ordinary conditions and requirements of a dwelling house the points to be observed during inspection are :—That at least 300 cubic feet of air space is allowed each person in a sleeping room and 400 in a room used for sleeping and any other purpose. Children under 10 years of age are generally allowed half this amount, although children are far more susceptible to the effects of want of fresh air than adults. That every sleeping room is perflated daily by an open window for an hour or two whenever possible. That the cisterns are kept cleansed. That one closet at least is provided for every 12 persons, and is kept clean and in good order and repair. That the ash receptacles are dry and clean and in good repair and contain no wet refuse. In reference to the state of cleanliness of the rooms, that the refuse matters, liquid and solid, are removed daily and the receptacles cleansed, and that the surfaces are kept clean and the floors swept daily and washed weekly. As regards the cleansing of the house, this is done annually by washing or whitewashing where required, and renewing the paint when and where necessary. That no animals are kept so as to render the premises filthy. That yards and and open spaces are clean and in good order, and the former properly paved and drained. Lastly, that the presence of infectious sickness is immediately reported.

It is generally in this class of house that *underground dwellings* exist, that is to say, any underground room let separately as a dwelling, the floor of which is more than three feet below the adjoining ground level. In inspecting such a dwelling to ascertain whether or not it is illegally occupied, it should be noted whether there is a bed in the room, and whether the room is let separately from any other room in the house, except an adjoining front or back underground room. It must be ascertained whether the cellar is seven feet high and whether it is three feet above the nearest ground level. If there be outside, and along the entire frontage, an open area two feet six inches wide, and whether the surface is six inches lower than the floor level. Whether the room is effectually drained. If there be the use of a closet and ash receptacle, and whether the room has a proper fire-place and flue, and an external window nine feet square, the upper half opening, or in case of a back cellar half this size. Remember that steps for access to the cellar, and other means of access to any dwelling above, are allowed in or over the area provided they do not block the window. In addition to these requirements, in London there are others, although it is in the power of the sanitary authority

to modify them. The principal are, that there is a proper damp course in the walls, that the area is properly paved, that the space beneath the floor (if any) is ventilated into the outer air, and that the room is secure against the rising of exhalations. It is extraordinary that the last two, especially the former of the two, should have been omitted from the requirements of the Public Heath Act, 1875. Even now there is no provision, as to the other side of a back area, that is to say beyond three feet of the house, to prevent the erection of high structures that may block out practically all light and air from the dwelling. This is a condition of things very commonly found in the metropolis.

There is another kind of lodging-house very similar to those just mentioned, namely, *seamen's lodging-houses*, and the Sanitary Authority of a seaport town, with the sanction of the Board of Trade, may make Bye-Laws and Regulations for licensing, inspecting, and for the sanitary condition of these. It is unnecessary to give such conditions in detail. They may be sufficiently appreciated from what has been already said in reference to other lodging-houses.

The Common Lodging House invites our attention next. This is a house kept for profit, in which sleeping and other accommodation is provided, more or less in common, for strangers, at a charge of a few pence per night. Here upon inspection you will ascertain, firstly, that the conditions of wholesomeness needed for dwelling houses in general are observed, and, secondly, that it possesses certain conditions in particular. You will look first for the words "Registered Common Lodging House" affixed outside, and inside for a copy of the Bye-Laws with respect to Common Lodging Houses affixed in a suitable and conspicuous position. In each room you will observe that a placard is affixed in a conspicuous position, stating the number and description of the room, and the maximum number of lodgers authorised to be received into it at one time With regard to the furniture, that the number of beds and utensils sufficient for the maximum number of persons allowed is supplied in each room. With reference to the separation of sexes, it must be seen that only one male occupies each bed, that no male over ten years of age occupies a room used by females, that no female occupies a room used by males above ten, excepting a room set apart for married couples, in which case you will see that a wooden partition is fixed from six inches above the floor to a sufficient height above each bed, so as to act as an effectual screen. As to cleansing, note that the beds and bedding are kept clean and wholesome and aired daily, vessels cleansed daily, all floors and stairs swept daily and washed weekly, and all

surfaces of walls, furniture and effects kept cleansed, and that cleanliness and ventilation generally are maintained. That sufficient water is supplied for washing in basins, and that these as well as the towels are kept clean. That the sanitary conveniences, ash receptacles, and open spaces, are kept clean and in good order. When inspecting a house *for registration*, in addition to the ordinary conditions of wholesomeness, it should be specially observed that the ventilation generally is good, and that the bed rooms have proper ventilators and are above ground, that the kitchen accommodation is proper and the water supply sufficient, that there is one closet for at least every twenty lodgers, that there are sufficient ash receptacles, and that the washing accommodation is sufficient and separate from the bed rooms.

Another class of common dwelling that has been brought more into prominence by the Salvation Army are *night shelters* and *refuges*. Air space, ventilation, and cleanliness are much to be desired where human beings are closely congregated in buildings put to such use. The conditions are those of common lodging-houses, in fact rather more acute, but not being kept for profit it has been ruled by the Courts that they cannot be registered as such.

Common lodging-houses have hitherto been ordinary dwelling-houses converted to that use, and in the majority of instances are ill-adapted for the purpose. Glasgow led the way in the matter of improvement, but recently some improved models have been erected in London and are worthy of a visit, namely, the common lodging-house of the London County Council, Parker Street, Drury Lane, and Lord Rowton's Lodging-House, Bond Street, Vauxhall, the latter is even better appointed than the former.

In a similar manner the conversion of ordinary dwelling-houses constructed for one family to the use of many has been partly superseded by a number of large buildings specially constructed in separate dwellings. The conditions of construction required in this class of buildings are not even now settled, although there are certain points that are desirable. The limitation of the height of the building to about five storeys. The proper lighting of such dwellings, so that above lines drawn from the bases of the rear and fore fronts, at an angle of 45° upwards, that is, half-way between the vertical fronts and the horizontal ground level, there should be no obstruction to light and air. All the habitable rooms should possess through ventilation. The minimum height of rooms nine feet, and the minimum area 144 square feet for living, and ninety-six square feet for sleeping rooms. On each floor there should be sufficient and proper

water supply, and a sufficient and proper number of water closets. In new dwellings to be erected the latter should be cut off by a disconnecting lobby open to the external air, and they are best situated one above another in a tower. This is important, because such buildings are constructed on the flat, often in such a manner that the apartments communicate directly or indirectly with each other, having no ventilated staircase well to separate them as in an ordinary house. The different manner in which various dwellings of this type are occupied render it difficult to generalise as to the exact details of arrangement and construction, but the addition of a balcony or open space, attached to each dwelling, or on each floor, for exclusive use, is a great advantage sanitarily.

It is held by many that these large blocks of dwellings are objectionable, and that smaller houses or cottage blocks should be erected. The immense value of land in the centre of cities militates against this, but outside this area a number of cottages or smaller dwellings for one, two, or three families have been erected in such a manner as to dispense with a common staircase. There is no reason why the Bye-Laws for houses let in lodgings should not be applied to dwellings of these last two types if necessity demands, but the occupants are generally of a provident and careful class, and a resident caretaker exercises constant supervision.

Stable dwellings of old date, and some times more recent, are in the majority of cases extremely objectionable in construction and arrangement, and you will experience some difficulty in remedying the objectionable conditions. However anxious you may be to remove gullies from outside dwelling houses you will find these invariably to exist inside stables, and the rooms over the stable are mostly entered by a staircase through the stable, so that dwelling over a stable is only an apology for dwelling in a stable. The effluvia produced by the animals, and by their excreta (which is frequently allowed to accumulate), ascend. The closet is usually situated under the stairs, and is seldom lighted or ventilated. Frequently the back dwelling rooms in the loft above have no proper skylight. These are matters which will require your attention to remedy, by proper outside manure-bins, and proper light and ventilation to closets and back rooms, and cleanliness generally. The ventilation of the stable may frequently be improved by the insertion of air bricks in the back wall, for stables are generally in the same condition of relative position as back to back houses, having only one front.

It is almost unnecessary to advise you that when you discover dwelling houses grossly unhealthy on account of bad construc-

tion and repair, or grossly obstructive dwellings, or an area containing these, it is your duty to report the fact to the Medical Officer of Health for the purpose of putting the Housing of the Working Classes Act into force.

I must now direct your attention to certain classes of professional and trade premises. *Schools* require inspection from time to time. The area, space, and ventilation of the class rooms, and the situation and condition of the W.C.'s and drainage are points to be observed in all schools, whether day or residential. In the latter the ordinary sanitary conditions of a dwelling house are required in addition.

Factories, premises upon which steam, water, or other power is used for manufacturing, are under the supervision of the Factory Inspectors. But the supervision of *Workshops* now falls within the duties of Sanitary Inspectors. A workshop includes any premises, room, or place within which any manual labour is exercised for the purpose of gain, and over which the employer has a right of access. You will observe that the use of power converts the premises into a factory. A *Domestic Workshop* is a workshop in a private house, room, or place that is used as a dwelling, and in which the only persons employed are members of the same family dwelling there. Bakehouses and Laundries are also regarded as Workshops. A *retail bakehouse* is any bakehouse, or place in which the bakings are sold by retail in a shop or place occupied together with a bakehouse. It does not include wholesale bakehouses or baking factories. There is no special definition of a laundry.

You have power to inspect by day any place believed to be a *workshop*, and by night when any person is believed to be employed there, night meaning from 9 p.m. to 6 a.m. The points to be observed in inspecting are:—That the place is in a cleanly state. That the walls and tops of rooms, passages, and staircases are limewashed, or, if painted and varnished every seven years, are washed at least within every 14 months, and at other times when necessary for health. That no effluvia arise from excremental sources, or other nuisances dangerous to health. That it is not overcrowded, and is so ventilated as to render all impurities generated therein harmless as far as practicable. That if any child under 14, young person 14 to 18, or woman over 18 years, be employed it be reported in order that the Factory Inspector may be informed. That lists of out-workers are properly kept, notes of these should be taken. That the sanitary conveniences are sufficient and especially with regard to number, and that there is separate accommodation for each sex. It is common to find these in the form of latrines, trough-

closets, and urinals, and it should be ascertained that they are properly attended to at frequent intervals.

In regard to *Bakehouses* they are not only subject to the requirements of workshops generally, but there are certain special requirements of which particular note should be taken. They are:—That all the inside walls and tops of rooms, passages, and staircases are either painted or varnished or lime-washed. That, if the former, painted in oil of three coats and renewed every seven years and washed every six months; if the latter, limewhited at similar half-yearly intervals. That no place on the same level, which is part of the bakehouse premises, is used as a sleeping place, unless completely partitioned off and possessing a window nine feet square one-half opening. That there is no receptacle for excreta, or liquid, or solid refuse, within or communicating with the bakehouse, and that the cistern supplies no closet directly, and generally that the bakehouse is not unfit for use or occupation. If unfit the bakehouse cannot be compulsorily closed, but the offender can be fined until it be brought into conformity with the requirements of the Act. In London and other large towns numbers of bakehouses are situated underground, a condition of things which entails the enclosure of cellars, yards, and areas, the consequent exclusion of light and ventilation, and the placing of refuse receptacles and solid refuse as well as drain openings within or near the bakehouse, from inability to place them elsewhere. Unfortunately the regulation of bakehouses appears only to have contemplated the protection of the health of the workers therein, and to have overlooked the protection of the food, especially after it has left the ovens.

Slaughterhouses.—In inspecting slaughterhouses it is necessary to ascertain that the slaughterhouse premises have been licensed by the authority, and that the license has been duly registered. You will then proceed to ascertain that water is supplied to every animal in a lair previously to slaughtering. That there is proper means for securing the head of cattle to avoid suffering. That the ventilation, drainage, and water supply is in proper order and efficient. That the quantity of water especially is sufficient for cleansing purposes. That the walls and floor are in good repair so as to prevent absorption, and are cleansed within three hours of slaughtering. That all the internal surfaces are hot limewashed every three months. That no dog is kept in the slaughterhouse, nor any other animal except such as is intended for slaughter. Dogs are specially excluded because they harbour a tape worm (tænia echinococcus) the cystic form of which (echinococcus hydatid) becomes parasitic in both ruminants and man. That animals are kept no longer than is

necessary, and only in the lairs. That non-absorbent vessels with tight covers are provided and cleansed, and that all refuse matters are placed in them forthwith and removed every 24 hours. Similarly that all skin, fat, and offal are removed within the same period. In inspecting slaughterhouses previous to *registration* for the purpose of granting a license certain other points must be observed, namely: That the premises are not within 100 feet of any dwelling house, and are open to the air on two sides. That the floor of the slaughterhouse is not below the level of the ground, and that the approach is not through a dwelling house or shop, and not inclined more than one in four. That there is no room or loft over. That an ample receptacle for water is provided, the bottom of which is not less than 6 feet above the floor level. That there are means of thorough ventilation. That the floor is well paved with impervious material sloped towards a properly-trapped gully. That the inside walls are covered with a smooth impervious material to a sufficient height, say 5 or 6 feet. That no possible source of effluvia communicates with the slaughterhouse, and that every lair is properly drained, paved, and ventilated, and has no habitable room over.

Dairies, Cowsheds, and Milkshops are controlled under Orders of the Local Government Board, dated 1885-86. These Orders have been made under the Contagious Diseases (Animals) Act, 1886, and it is compulsory for Dairymen to be registered and for the Sanitary Authority to keep a register. Furthermore, new dairy premises must be constructed to the satisfaction of the Sanitary Authority, and old buildings cannot be occupied unless they provide for the health of the cattle, cleanliness of the vessels, and the protection of the milk. An infected person, or one who has been in contact with an infected person, is not permitted to take part in the business. No receptacle for excreta may communicate with a dairy building, nor may the building be used for sleeping, or other improper purpose, and swine are not to be kept in it, and the milk of a diseased cow suffering from pleuro-pneumonia, cattle plague, or foot-and-mouth disease, is not to be used for human food, nor unless boiled for the food of animals. This Order makes it permissive for the Sanitary Authority to make Regulations, and in such Regulations the points usually provided for, and that will require the attention of the Sanitary Inspector, are:—That the *Cowshed* is sufficiently lighted. That the ventilation is thorough, and preferably by louvred ventilators inserted in a lantern roof. That each cow is allowed 800 cubic feet of air space, or 600 with perfect ventilation, any height above sixteen feet not being taken into account. That each cow has a superficial

space of eight feet by four, or two cows in one stall eight feet by seven. That the shed is properly paved with impervious material, sloped to a channel terminating at a trapped gully situated outside where practicable. That a properly covered tank, kept cleansed, and containing at least twelve gallons of water for each cow is provided, the bottom being at least six feet from the floor, and the overflow disconnected. That each stall is provided with a water trough of impervious material, supplied by a proper pipe, and emptying by a proper waste. That the walls, doors, etc., are covered with an impervious material to a height of five or six feet. That impervious receptacles properly drained are provided outside the cowshed for grains and also for dung, and that they are not kept inside. That the upper part of the inside surface is cleansed and lime-washed every six months and the lower five or six feet as frequently as necessary. That the floors and troughs are cleansed twice daily with water, and the dung and offensive litter removed, and that all milk utensils are scalded or steamed as frequently each day as necessary.

With reference to *Dairies* the lighting and ventilation must be sufficient and thorough, the inner surface of the walls of impervious material to a height of 5 or 6 feet, the floor properly drained, and sloping to an opening leading to a properly trapped gully outside; for water a properly covered tank, periodically cleansed, and of sufficient capacity, must be provided, the overflow discharging into the open; the upper parts of the buildings must be cleansed and lime washed, the lower parts of the walls, fixtures, and floors must be cleansed, and the milk utensils scalded or steamed as frequently as may be necessary to keep them cleanly. In *milk shops* it should be noted that the fixtures are kept in clean condition, that the milk utensils are thoroughly cleansed with boiling water or steam as frequently as may be necessary, and that the water supply is pure. To prevent infection or contamination it should be seen that immediate notice is given of infection amongst the employés or their families. In case of infection all milk and utensils should be immediately removed from the infected building and thoroughly cleansed, and not replaced until the building itself has been thoroughly disinfected and cleansed. Offensive effluvia should be guarded against by providing that no milk or utensils are kept in any place where they are likely to arise.

Offensive trades and nuisances are dealt with in other lectures, therefore I will conclude with a few words as to equipment. It is useful to carry official visiting cards, and also a small official certificate of appointment and power of entry bearing the seal of the authority, although it may be rarely

required; also a few forms for taking verbal complaints when on duty, upon which should be entered the date, the name and address of the complainant, the subject and locality of the complaint, and your own signature. These can be entered in the complaint book at the office subsequently, and be careful to preserve these forms, as well as all letters of complaint, to defend yourself against any possible charge of spite or excess of duty. Also forms for enquiring into infectious cases, forms for the inspection of dwelling-houses, for underground dwellings, &c. These, probably, you will find already drawn up for you by the Medical Officer of Health, and the various office books necessary will also be arranged by the Clerk to the particular Authority in conjunction with him; but you will always carry with you a pocket note book, and from it transcribe your daily work into your diary or journal. You will also require certain appliances. For testing drains: odour tests, in bottles or tubes; smoke tests, cases or a machine; exploratory tests, tools and labourers for opening up; elastic plugs for the hydraulic or water test; and a level for gradients. For measurement: a foot rule, a long tape measure (one chain or 66 feet), measuring rods (5 or 6 feet laths, marked to feet and inches). For smoke, a diagram of numbered shades. For meat and other food, perhaps a lens. For sampling, bottles, tins, &c., a special note book, and a bag. For disinfection, vaseline for metal surfaces, gummed paper for chinks, brown paper for fire-places, pans for sulphur or bleaching powder. The Authority to be properly equipped must provide certain accommodation, an infectious hospital, an ambulance, disinfecting vans, a disinfecting chamber and destructor furnace, and a temporary shelter; also an infectious and a general mortuary, a post-mortem room, and a Coroner's court.

Fully equipped in knowledge and appliances, it remains with you to perform your duties to the Public, the Authority, and the Medical Officer, faithfully and discreetly, combining the *suaviter in modo* with the *fortiter in re*.

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